

A1  
Cont.

- (c) culturing said stem cells of step (b) to form cells which are lineage-restricted to dopaminergic neurons; and  
(d) engrafting into said patient said lineage-restricted cells of step (c).
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A2

4. (Amended) The method of claim 1, wherein step (c) comprises inducing cell division using a growth factor.
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[Kindly add new claims 12-22 as follows:]

A3

12. (New) The method of claim 1, wherein step (c) further comprises culturing said stem cells in the presence of fibroblast growth factor-8 (FGF-8).

13. (New) The method of claim 1, wherein step (c) further comprises culturing said stem cells in the presence of sonic hedgehog (Shh).

14. (New) A method of treating a human patient suffering from Parkinson's disease, said method comprising the steps of:

- (a) obtaining one or more stem cells;
- (b) transfecting said stem cells with PTX-3;
- (c) culturing said stem cells of step (b) to form cells which are lineage-restricted to dopaminergic neurons; and
- (d) engrafting into said patient said lineage-restricted cells of step (c).

15. (New) The method of claim 14, wherein step (c) comprises inducing cell division using a growth factor.

16. (New) The method of claim 15, wherein said growth factor is leukemia inhibitory factor.

17. (New) The method of claim 15, wherein step (c) further comprises culturing said stem cells in the presence of fibroblast growth factor-8 (FGF-8).

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cont  
18. (New) The method of claim 15, wherein step (c) further comprises culturing said stem cells in the presence of sonic hedgehog (Shh).

19. (New) A method of treating a human patient suffering from Parkinson's disease, said method comprising the steps of:

- (a) providing cells which are lineage-restricted to dopaminergic neurons, and
- (b) engrafting into said patient said lineage-restricted cells of step (a).

20. (New) The method of claim 19, wherein said cells are stem cells or are derived from stem cells transfected with Nurr-1.

21. (New) The method of claim 19, wherein said cells are stem cells or are derived from stem cells transfected with PTX-3.

22. (New) The method of claim 19, wherein said cells are stem cells or are derived from stem cells transfected with Nurr-1 and PTX.